Alberta

Traffic Collision Statistics

1999

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1999 Overview

- The number of **traffic collisions decreased 3.4%** over the past year from 98601 collisions in 1998 to 95246 in 1999.
- The number of **traffic injuries increased 2.1%** over the past year from 24935 injuries in 1998 to 25451 in 1999.
- The number of **traffic fatalities decreased 19.1%** over the past year from 429 fatalities in 1998 to 347 in 1999.
- **The highest number of casualty collisions** occurred in **September.**
- **Friday** was the most collision-prone day of the week. However, more fatal collisions occurred on Saturday.
- **The most collision-prone period of time was the afternoon rush-hour.**
- **Casualty rates** were highest for persons between the **ages of 15 and 24.**
- **Male drivers** between the **ages of 16 and 19** had the highest involvement rate of all drivers involved in casualty collisions.
- Following too closely, running off the road and left turn across path were the most frequently identified improper driver actions contributing to casualty collisions.
- **Fatal collisions** occurred most frequently in **rural areas,** whereas **injury and property damage collisions** occurred more frequently in **urban areas.**
- **27.6% of pedestrians** involved in **fatal collisions had consumed alcohol prior to the collision** compared to **15.9% of pedestrians in injury collisions.**
- **22.8%** of drivers involved in fatal collisions **had consumed alcohol** prior to the crash compared to **5.6%** of drivers in injury collisions.
- Collision involved restraint users had a much lower injury rate (15.6%) than those not using restraints (46.7%).

Preface

The purpose of this report is to provide an overview of the "who", "what", "when", "where", "why", and "how" of traffic collisions which occurred in Alberta during 1999. Although the report is general in nature, it pays particular attention to casualty collisions, that is, those collisions which result in death or injury. Legislation in Alberta requires that a traffic collision which results in either death, injury or property damage to an apparent extent of $1000.00 or more, be reported immediately to an authorized peace officer. The officer completes a standardized collision report form which provides information on various aspects of the traffic collision. This report is based on the data collected from these report forms.

The collision report form is issued with standard instructions to every police service within Alberta, to be completed by the officer attending the scene of a motor vehicle collision or at a police station. Police priorities at the scene of a collision are to care for the injured, protect the motoring public and clear the roadway. Completion of the collision report form is a secondary, but necessary task.

After completion, the information on the collision report form is coded for input to computer files. The Alberta Collision Information System, which has been operational since 1978, undergoes several manual and computerized inspections each year in order to ensure maximum accuracy of the final data output. This collision information is used to make Alberta's roads safer for all road users. Due to continuing police investigation, some numbers presented in this report may be subject to revision. It should also be noted that not all percentage columns will total 100 due to rounding error.

This report was produced based on collisions reported to Alberta Infrastructure by police, at the time of printing. The numbers presented in this report will not be updated. However, the patterns and trends detailed in this report represent an accurate description of Alberta's traffic collision picture.

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Table of Contents

Page

1999 Overview i

Preface iii

List of Tables vii

List of Figures x

Glossary xi

1999 Traffic Collision Summary 1

When the Collisions Occurred 7

Victims 13

Drivers 17

Vehicles 21

Environment 25

Special Types of Vehicles
- Motorcycles 29
- Truck Tractors 39
- Trains 45

Pedestrians 49

Bicyclists 59

Traffic Safety Issues
- Alcohol Involvement 67
- Restraint Use 77

List of Tables

		Page
Table 1.1	Alberta Traffic Collisions 1995-1999	2
Table 1.2	Traffic Collision Rates 1995-1999	3
Table 1.3	Provincial Comparison of Casualty Rates Per 10,000 Population 1995-1999	5
Table 2.1	Collision Occurrence by Month 1999	8
Table 2.2	Collision Occurrence by Day of Week 1999	9
Table 2.3	Collision Occurrence by Time Period 1999	10
Table 2.4	Collisions During 1999 Holidays	12
Table 3.1	Injuries and Fatalities by Road User Class 1999	14
Table 3.2	Age of Casualties 1999	15
Table 4.1	Age and Sex of Drivers Involved in Casualty Collisions: Per 1,000 Licensed Drivers 1999	18
Table 4.2	Improper Actions of Drivers Involved in Casualty Collisions 1999	20
Table 5.1	Types of Vehicles Involved in Casualty Collisions 1999	22
Table 5.2	Vehicular Factors Involved in Casualty Collisions 1999	23
Table 5.3	Point of Impact on Vehicles Involved in Casualty Collisions 1999	24
Table 6.1	Location of Collisions 1999	26
Table 6.2	Casualty Collision Occurrence by Surface Condition 1999	27
Table 7.1	Motorcycles Involved in Casualty Collisions 1995-1999	30
Table 7.2	Age and Sex of Motorcycle Drivers Involved in Casualty Collisions 1999	32
Table 7.3	Improper Actions of Motorcycle Drivers Involved in Casualty Collisions 1999	33
Table 7.4	Condition of Motorcycle Drivers Involved in Casualty Collisions 1999	34

Table 7.5	Motorcycle Vehicular Factors in Casualty Collisions 1999	35
Table 7.6	Casualty Collisions Involving Motorcycles: Month of Occurrence 1999	36
Table 7.7	Casualty Collisions Involving Motorcycles: Road Surface Condition 1999	37
Table 7.8	Truck Tractors Involved in Casualty Collisions 1995-1999	40
Table 7.9	Casualty Collisions Involving Truck Tractors: Improper Actions of Truck Tractor Drivers Involved in Casualty Collisions 1999	41
Table 7.10	Casualty Collisions Involving Truck Tractors: Condition of Truck Tractor Drivers Involved in Casualty Collisions 1999	42
Table 7.11	Casualty Collisions Involving Truck Tractors: Vehicular Factors of Truck Tractors Involved in Casualty Collisions 1999	43
Table 7.12	Casualty Collisions Involving Truck Tractors: Month of Occurrence 1999	44
Table 7.13	Trains Involved in Casualty Collisions 1995-1999	46
Table 7.14	Casualty Collisions Involving Trains: Month of Occurrence 1999	47
Table 7.15	Casualty Collisions Involving Trains: Actions of Drivers Involved in Casualty Collisions with Trains 1999	48
Table 8.1	Casualty Collisions Involving Pedestrians: Month of Occurrence 1999	50
Table 8.2	Casualty Collisions Involving Pedestrians: Day of Week 1999	51
Table 8.3	Casualty Collisions Involving Pedestrians: Time Period 1999	52
Table 8.4	Casualty Collisions Involving Pedestrians: Location 1999	53
Table 8.5	Casualty Collisions Involving Pedestrians: Actions of Drivers Involved in Casualty Collisions with Pedestrians 1999	54
Table 8.6	Age of Pedestrian Casualties 1999	55
Table 8.7	Condition of Pedestrians Involved in Casualty Collisions 1999	57
Table 8.8	Age of Drinking Pedestrians Involved in Casualty Collisions 1999	58
Table 9.1	Casualty Collisions Involving Bicycles: Month of Occurrence 1999	60
Table 9.2	Casualty Collisions Involving Bicycles: Day of Week 1999	61
Table 9.3	Casualty Collisions Involving Bicycles: Time Period 1999	62
Table 9.4	Age and Sex of Bicyclists Involved in Casualty Collisions 1999	63
Table 9.5	Improper Actions of Bicyclists Involved in Casualty Collisions 1999	64
Table 9.6	Condition of Bicyclists Involved in Casualty Collisions 1999	65

Table 10.1	Condition of Drivers in Casualty Collisions 1999	68
Table 10.2	Age and Sex of Drinking Drivers in Casualty Collisions 1999	71
Table 10.3	Alcohol-Involved Casualty Collisions: Month of Occurrence 1999	73
Table 10.4	Alcohol-Involved Casualty Collisions: Day of Week 1999	74
Table 10.5	Alcohol-Involved Casualty Collisions: Time Period 1999	75
Table 10.6	Restraint Use of Vehicle Occupants and Injury Severity 1999 (Use vs. Non-Use)	78

List of Figures

		Page
Figure 1	Alberta Traffic Collision Rates Per 10,000 Population 1995-1999	4
Figure 2	Provincial Traffic Fatality Rates 1999	6
Figure 3	Collision Occurrence by Month/Day of Week/Time Period 1999	11
Figure 4	Age of Casualties 1999	16
Figure 5	Age and Sex of Drivers Involved in Casualty Collisions 1999	19
Figure 6	Number of Motorcycles Involved in Fatal Collisions 1995-1999	31
Figure 7	Pedestrian Casualties 1999	56
Figure 8	Involvement of Drinking Drivers in Casualty Collisions 1995-1999	69
Figure 9	Driver Condition in Casualty Collisions 1999	70
Figure 10	Drinking Drivers Involved in Casualty Collisions 1999	72
Figure 11	Alcohol-Involved Fatal Collisions by Month/Day of Week/Time Period 1999	76

Glossary

Alcohol Impaired - In the judgement of the police officer, driving ability was impaired by alcohol consumption. Whether or not the subject was actually charged is not taken into consideration by the collision report form.

Casualty Collision - A vehicle collision which results in either a fatal or personal injury.

Drinking Driver - Refers to those drivers judged by the police officer as having been drinking prior to the collision or as being alcohol impaired at the time of the collision. Whether or not the driver was actually charged is not taken into consideration by the collision report form.

Fatality - A fatality is the death of a person that occurs as a result of a motor vehicle collision within 30 days of the collision.

Had Been Drinking - In the judgement of the police officer, the driver had recently consumed alcohol but his driving ability was not obviously impaired.

Major Injury - Persons with injuries or complaint of pain that went to the hospital and were subsequently admitted even if for observation only.

Minor Injury - Persons with injuries or complaint of pain that went to the hospital, were treated in emergency (or refused treatment) and SENT HOME without ever being admitted to the hospital. (Also includes people who indicated that they intended to seek medical treatment).

Motorcyclist - Refers to drivers and passengers of motorcycles.

Occupant Casualties - Refers to people who were injured or killed as a result of a vehicle collision and were identified as being either a vehicle driver or passenger.

Property Damage - A vehicle collision which resulted in property damage exceeding $1000.00.

Reportable Collision - A vehicle collision which resulted in death, injury or property damage greater than $1000.00.

Rural - Any area outside of what is defined as **'Urban'.**

Urban - Any area within the corporate boundaries of a city, town, village or hamlet.

1999 Traffic Collision Summary

Introduction

During 1999, 95246 collisions were recorded on Alberta roadways. Property damage collisions (over $1000) represented 81.4% (77543) of this total while 18.3% (17398) were non-fatal injury collisions. Fatal collisions accounted for 0.3% (305) of the total reported collisions.

Five Year Trends

The fatality rate, in terms of 10,000 population for 1999 has declined from 1998 and stands at 1.2. The fatal collision rate is also down at 1.0 from 1.2 last year.

The non-fatal injury rate, in terms of population is up slightly in 1999, but is down slightly in terms of licensed drivers and registered vehicles. The non-fatal injury collision rate changed very little in terms of population, licensed drivers and registered vehicles from 1998.

In terms of 10,000 population, property damage and total collision rates are down, standing at 261.6 and 321.3, respectively.

Provincial Comparisons

In order to get a clear picture of Alberta's traffic injuries in comparison to other provinces, rates rather than absolute numbers are utilized. In this instance, casualty rates per 10,000 population were examined.

Of the six other provinces for which information was available three had higher fatality rates than Alberta in terms of 10,000 population. However, Alberta recorded the highest injury rate, followed by Prince Edward Island and Saskatchewan.

Table 1.1

Alberta Traffic Collisions

1995 - 1999

Severity of Collision	**1999**	**1998**	**1997**	**1996**	**1995**
Fatal Collisions	305	358	357	299	328
Non-Fatal Injury Collisions	17398	16987	16231	14988	13958
Property Damage Collisions	77543	81256	75777	78545	70934
Total Reportable Collisions	**95246**	**98601**	**92365**	**93832**	**85220**
Number Killed	347	429	429	349	403
Number Injured	25451	24935	23916	22268	20866
Total Number of Casualties	**25798**	**25364**	**24345**	**22617**	**21269**

Observations

In 1999, the overall number of collisions decreased 3.4% when compared to 1998. In 1999, injury collisions increased 2.4% and fatal crashes decreased by 14.8%. The number of fatalities decreased by 19.1% from 1998 to 1999, and the number of injuries increased by 2.1%. In terms of the past five years, overall collisions were lowest in 1995 and highest in 1998.

Table 1.2

Traffic Collision Rates

1995 - 1999

Severity of Collision	Rate Per 10,000 Population*					Rate Per 10,000 Licensed Drivers*					Rate Per 10,000 Registered Vehicles*				
	1999	1998	1997	1996	1995	1999	1998	1997	1996	1995	1999	1998	1997	1996	1995
Fatal Collisions	1.0	1.2	1.3	1.1	1.2	1.4	1.7	1.7	1.5	1.6	1.4	1.7	1.7	1.5	1.7
Number Killed	1.2	1.5	1.5	1.3	1.5	1.6	2.0	2.1	1.7	2.0	1.6	2.0	2.1	1.8	2.0
Non-Fatal Injury Collisions	58.7	58.3	57.0	53.9	50.8	80.0	80.0	78.5	74.2	69.9	79.6	79.7	78.7	75.2	70.7
Number Injured	85.8	85.5	84.0	80.1	75.9	117.0	117.5	115.7	110.2	104.5	116.4	117.0	115.9	111.7	105.7
Property Damage Only Collisions	261.6	278.8	266.2	282.4	258.1	356.5	382.9	366.4	388.8	355.4	354.6	381.2	367.3	394.1	359.5
Total Reportable Collisions	**321.3**	**338.3**	**324.4**	**337.4**	**310.1**	**437.9**	**464.6**	**446.7**	**464.5**	**427.0**	**435.6**	**462.5**	**447.8**	**470.9**	**432.0**

Observations

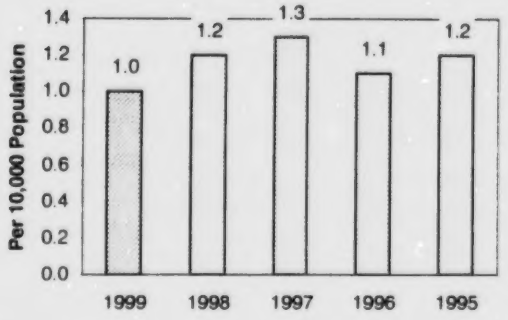
In terms of population, the fatal collision and fatality rates decreased from 1998. In terms of licensed drivers and registered vehicles for 1999, these rates also decreased from 1998.

The non-fatal injury rate, in terms of population is up slightly in 1999, but is down slightly in terms of licensed drivers and registered vehicles. The non-fatal injury collision rate changed very little in terms of population, licensed drivers and registered vehicles from 1998.

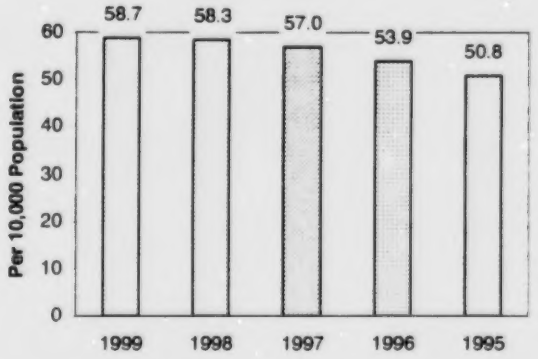
Property damage and total collision rates decreased in 1999.

*Sources:
Population - Statistics Canada as of July 1, 1999.
Licensed Drivers - Alberta Registries, as of December 31, 1999.
Registered Vehicles - Alberta Registries, as of December 31, 1999.

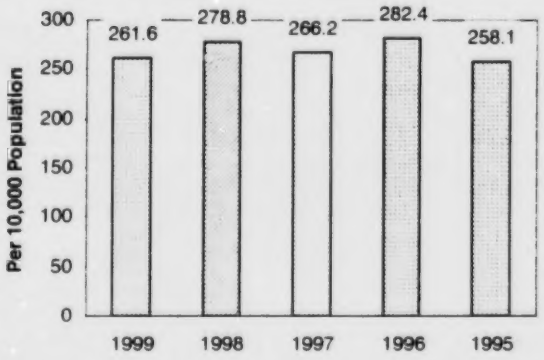
Fatal Collision Rates
Alberta 1995-1999



Injury Collision Rates
Alberta 1995-1999



Property Damage Collision Rates
Alberta 1995-1999



Overall Collision Rates
Alberta 1995-1999

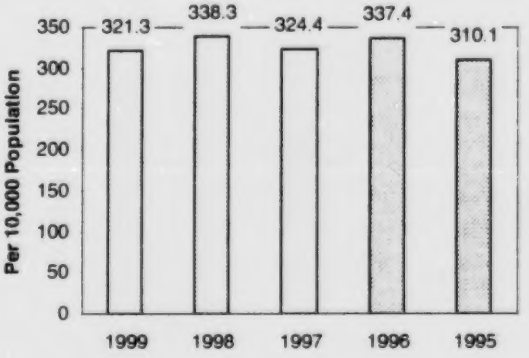


Figure 1

Table 1.3

Provincial Comparison of Casualty Rates Per 10,000 Population

1995 - 1999

	1999		1998		1997		1996		1995	
	Fatal	Injury	Fatal	Injury	Fatal	Injury	Fatal	Injury	Fatal	Injury
Alberta	1.2	85.8	1.5	85.5	1.5	84.0	1.3	80.1	1.5	75.9
British Columbia [1]	*	*	1.0	74.6	1.0	80.1	1.0	104.0	1.3	126.1
Saskatchewan	1.8	77.8	1.4	70.4	1.6	73.9	1.3	67.1	1.5	73.5
Manitoba	*	*	1.1	83.7	1.0	79.9	0.8	91.6	1.1	106.7
Ontario	*	*	0.7[2]	*	0.8	75.0	0.8	78.5	0.9	80.7
Quebec [3]	1.0	65.7	1.0	64.1	1.1	64.4	1.2	64.5	1.2	66.2
New Brunswick	1.5	71.4	1.3	69.4	1.4	67.1	1.2	62.7	1.5	72.4
Nova Scotia	1.0	70.4	0.9	69.9	0.9	68.1	1.2	66.8	1.1	67.0
Prince Edward Island	1.4	78.6	1.5	67.2	1.5	65.7	1.4	61.5	1.2	58.0
Newfoundland	0.8	55.1	0.6	47.3	0.6	48.1	0.8	45.7	0.5	42.8

Observations

In order to get a clear picture of Alberta's traffic injuries in comparison to other provinces, rates rather than absolute numbers are utilized. In this instance, casualty rates per 10,000 population were examined.

Of the six other provinces for which information was available three had higher fatality rates than Alberta in terms of 10,00 population. However, Alberta recorded the highest injury rate, followed by Prince Edward Island and Saskatchewan.

*Figures not available at time of printing.

(1) Figures for 1996-1999 are not comparable to previous years due to reporting changes.
(2) Source: Transport Canada. Preliminary Fatality Statistics 1998.
(3) Figures for 1999 are not comparable to previous years due to reporting changes.

Sources: Casualty statistics supplied by each province and may be subject to revision. Population estimates, as of July 1, 1999, Statistics Canada.

Provincial Traffic Fatality Rates
1999

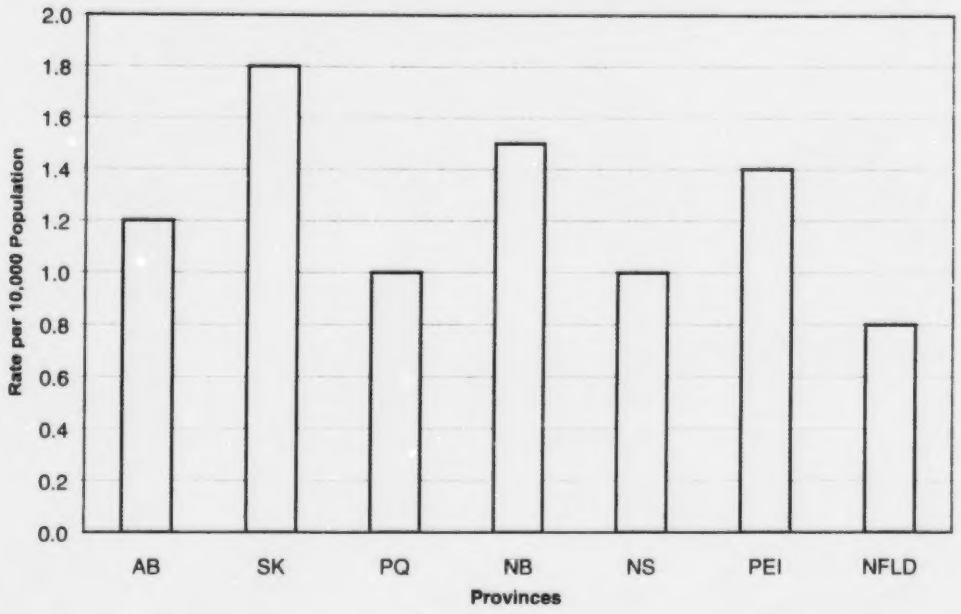


Figure 2

When the Collisions Occurred

Month

The month of September experienced more casualty collisions than other months. The highest number of property damage collisions was recorded during the month of January.

Day of Week

The daily distribution of collisions indicated that Friday was the most collision-prone day of the week. The largest number of fatal crashes occurred on Saturday.

Time

The afternoon rush hour period (3:00 p.m. - 6:59 p.m.) accounted for the highest proportion of collisions. The least collision-prone time period was the early morning (3:00 a.m. - 6:59 a.m.).

Holidays

The Victoria Day Long Weekend recorded the highest number of individuals killed. The five day Easter weekend recorded the highest number of injuries. The highest number of total collisions was recorded over the four-day Thanksgiving weekend.

Table 2.1

Collision Occurrence by Month

1999

Month	Fatal Collisions N	Fatal Collisions %	Non-Fatal Injury Collisions N	Non-Fatal Injury Collisions %	Property Damage Collisions N	Property Damage Collisions %	Total Collisions N	Total Collisions %
January	20	6.6	1481	8.5	8855	11.4	10356	10.9
February	14	4.6	1199	6.9	5743	7.4	6956	7.3
March	24	7.9	1346	7.7	5998	7.7	7368	7.7
April	16	5.2	1148	6.6	5010	6.5	6174	6.5
May	32	10.5	1388	8.0	5429	7.0	6849	7.2
June	31	10.2	1473	8.5	5988	7.7	7492	7.9
July	24	7.9	1566	9.0	6141	7.9	7731	8.1
August	32	10.5	1530	8.8	5878	7.6	7440	7.8
September	25	8.2	1620	9.3	6090	7.9	7735	8.1
October	31	10.2	1566	9.0	6644	8.6	8241	8.7
November	27	8.9	1575	9.1	7790	10.0	9392	9.9
December	29	9.5	1501	8.6	7800	10.1	9330	9.8
Unspecified	---	---	5	0.0	177	0.2	182	0.2
Total Number of Collisions	**305**	**100.00**	**17398**	**100.0**	**77543**	**100.0**	**95246**	**100.0**

Observations

The months of May and August experienced more fatal crashes than other months. The highest number of reported injury collisions was in September and the highest number of property damage collisions was in the month of January.

Table 2.2

Collision Occurrence by Day of Week

1999

	Fatal Collisions		Non-Fatal Injury Collisions		Property Damage Collisions		Total Collisions	
Day of Week	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Monday	40	13.1	2440	14.0	10682	13.8	13162	13.8
Tuesday	38	12.5	2621	15.1	10904	14.1	13563	14.2
Wednesday	32	10.5	2517	14.5	11517	14.9	14066	14.8
Thursday	37	12.1	2557	14.7	11523	14.9	14117	14.8
Friday	46	15.1	3055	17.6	13807	17.8	16908	17.8
Saturday	64	21.0	2397	13.8	10751	13.9	13212	13.9
Sunday	48	15.7	1800	10.3	8123	10.5	9971	10.5
Unspecified	---	---	11	0.1	236	0.3	247	0.3
Total Number of Collisions	**305**	**100.0**	**17398**	**100.0**	**77543**	**100.0**	**95246**	**100.0**

Observations

The daily distribution of collisions indicated that overall Friday was the most collision-prone day of the week. The largest number of fatal crashes occurred on Saturday.

Table 2.3

Collision Occurrence by Time Period

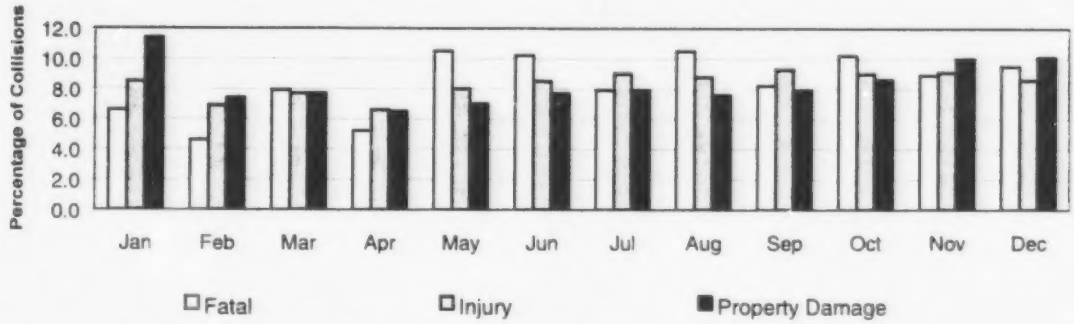
1999

Time Period	Fatal Collisions N	%	Non-Fatal Injury Collisions N	%	Property Damage Collisions N	%	Total Collisions N	%
11:00 p.m.-2:59 a.m.	49	16.1	1311	7.5	6531	8.4	7891	8.3
3:00 a.m.-6:59 a.m.	22	7.2	763	4.4	3622	4.7	4407	4.6
7:00 a.m.-10:59 a.m.	32	10.5	2842	16.3	12909	16.6	15783	16.6
11:00 a.m.-2:59 p.m.	51	16.7	4022	23.1	17888	23.1	21961	23.1
3:00 p.m.-6:59 p.m.	79	25.9	5654	32.5	22073	28.5	27806	29.2
7:00 p.m.-10:59 p.m.	63	20.7	2665	15.3	12991	16.8	15719	16.5
Unspecified	9	3.0	141	0.8	1529	2.0	1679	1.8
Total Number of Collisions	**305**	**100.0**	**17398**	**100.0**	**77543**	**100.0**	**95246**	**100.0**

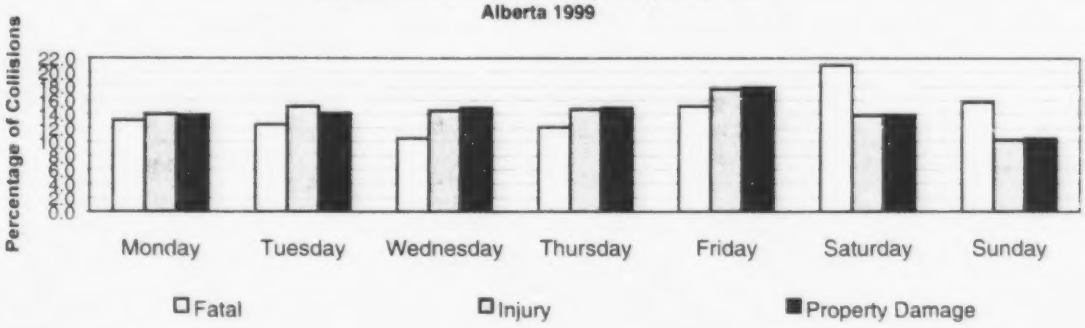
Observations

The afternoon rush hour period (3:00 p.m. - 6:59 p.m.) accounted for the largest percentage (29.2%) of collisions occurring in a 24 hour period. The least collision-prone time period was the early morning (3:00 a.m. - 6:59 a.m.).

Collision Occurrence By Month
Alberta 1999



Collision Occurrence By Day of Week
Alberta 1999



Collision Occurrence By Time Period
Alberta 1999

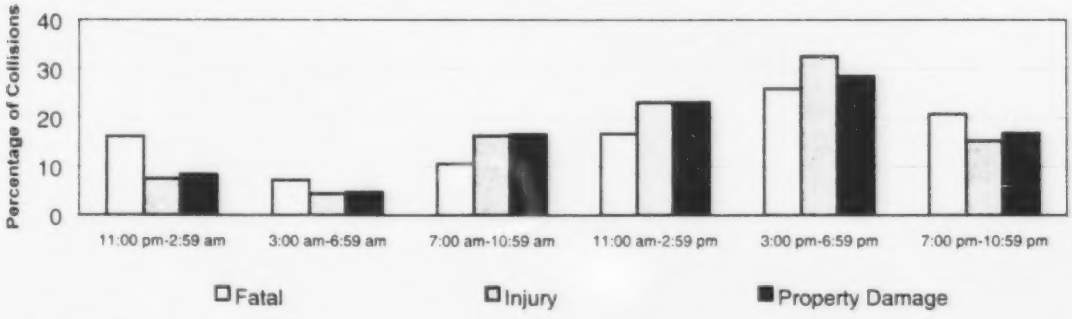


Figure 3

Table 2.4

Collisions During 1999 Holidays

Holidays	Number Killed N	Number Injured N	Total Collisions* N
New Year's Day (January 1)	4	58	297
Family Day Long Weekend (February 12-15)	2	212	877
Easter Long Weekend (April 1-5)	3	280	933
Victoria Day Long Weekend (May 21-24)	10	277	895
Canada Day (July 1)	---	89	243
August Long Weekend (July 30 – August 2)	4	242	832
Labour Day Long Weekend (September 3-6)	1	247	907
Thanksgiving Long Weekend (October 8-11)	8	265	950
Remembrance Day (November 11)	---	34	204
Christmas Season (December 24-27)	7	190	799
Total	**39**	**1894**	**6937**

Observations

The Victoria Day Long Weekend recorded the highest number of individuals killed. The five day Easter weekend recorded the highest number of injuries. The highest number of total collisions was recorded over the four-day Thanksgiving weekend.

*Total collisions includes fatal, injury, and property damage collisions.

Victims

Road User Class

The majority of traffic victims were drivers and passengers of vehicles. Pedestrians and bicyclists accounted for 4.8% and 2.7% of the total casualties, respectively.

Age of Casualties

Casualty rates per 10,000 population were highest for persons between the ages of 15 and 24. The lowest casualty rates were recorded for children 14 and under.

Table 3.1

Injuries and Fatalities by Road User Class

1999

Road User Class	Persons Killed N	Persons Killed %	Persons Injured N	Persons Injured %	Total Casualties N	Total Casualties %
Drivers	200	57.6	15018	59.0	15218	59.0
Passengers	74	21.3	7739	30.4	7813	30.3
Pedestrians	32	9.2	1210	4.8	1242	4.8
Bicyclists	5	1.4	683	2.7	688	2.7
Motorcyclists	10	2.9	475	1.9	485	1.9
Other	12	3.5	204	0.8	216	0.8
Unspecified	14	4.0	122	0.5	136	0.5
Total Casualties	**347**	**100.0**	**25451**	**100.0**	**25798**	**100.0**

Observations

The majority of traffic victims were drivers and passengers of vehicles. Pedestrians and bicyclists accounted for 4.8% and 2.7% of the total casualties, respectively.

Table 3.2

Age of Casualties

1999

Age In Years	Persons Killed N	Persons Killed %	Person Injured N	Person Injured %	Casualty Rate Per 10,000 Population*
Under 5	11	3.2	353	1.4	18.5
5 - 9	5	1.4	700	2.8	32.6
10 - 14	6	1.7	910	3.6	41.7
15 - 19	42	12.1	3745	14.7	173.2
20 - 24	49	14.1	3565	14.0	164.3
25 - 29	36	10.4	2818	11.1	127.1
30 - 34	35	10.1	2457	9.7	106.5
35 - 44	53	15.3	4489	17.6	85.5
45 - 54	40	11.5	2887	11.3	76.4
55 - 64	19	5.5	1483	5.8	66.3
65 and over	51	14.7	1443	5.7	50.8
Unspecified	---	---	601	2.4	
Total Casualties	**347**	**100.0**	**25451**	**100.0**	

Observations

Casualty rates per 10,000 population were highest for persons between the ages of 15 and 24. The lowest casualty rates were recorded for children 14 years of age and younger.

* Based on estimates of the Alberta population by age groups and sex, July 1, 1999, Statistics Canada.

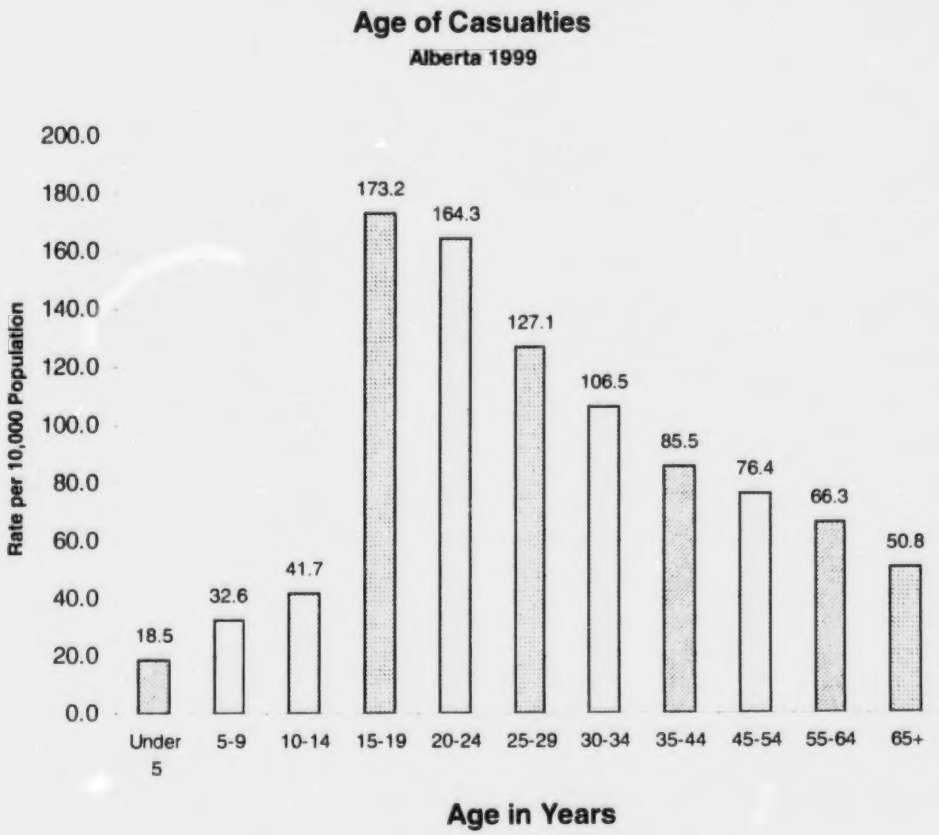

Age of Casualties
Alberta 1999
Rate per 10,000 Population
200.0
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
18.5
32.6
41.7
173.2
164.3
127.1
106.5
85.5
76.4
66.3
50.8
Under 5
5-9
10-14
15-19
20-24
25-29
30-34
35-44
45-54
55-64
65+
Age in Years

Figure 4

Drivers

Age and Sex of Drivers

Collision rates per 1000 licensed drivers indicated that 16-19 year olds were more likely to be involved in a casualty collision than any other age group.

Driver Actions

Following too closely (26.7%), running off the road (14.2%) and left turn across path (12.4%) were the most frequently identified improper driver actions contributing to casualty collisions.

Table 4.1

Age and Sex of Drivers Involved in Casualty Collisions:

Per 1,000 Licensed Drivers

1999

	Males			Females			Total*		
Age of Driver	**N**	**%**	**Per 1000* Licensed Drivers**	**N**	**%**	**Per 1000** Licensed Drivers**	**N**	**%**	**Per 1000** Licensed Drivers**
Under 16	249	0.8	15.4	87	0.3	6.7	338	1.1	11.5
16 – 17	1007	3.1	30.9	630	1.9	22.4	1638	5.1	27.0
18 – 19	1355	4.2	34.4	853	2.6	24.5	2209	6.8	29.8
20 – 24	2864	8.9	26.1	1744	5.4	17.9	4609	14.2	22.3
25 – 34	4591	14.2	19.2	2716	8.4	12.6	7307	22.6	16.1
35 – 44	4238	13.1	15.3	2832	8.8	11.0	7071	21.9	13.2
45 - 54	2735	8.5	13.2	1651	5.1	8.9	4386	13.6	11.2
55 - 64	1454	4.5	12.4	754	2.3	7.5	2208	6.8	10.1
65 and over	1317	4.1	11.3	628	1.9	7.0	1945	6.0	9.4
Unspecified	138	0.4		47	0.1	0.0	641	2.0	
Total Number of Drivers	**19948**	**61.7**	**17.3**	**11942**	**36.9**	**11.7**	**32352**	**100.0**	**14.9**

Observations

Collision rates per 1000 licensed drivers indicated that 18 to19 year olds were more likely to be involved in a casualty collision than any other age group. The next age group most likely to be involved in casualty collisions were 16 to 17 year olds.

*Total includes drivers whose sex was not specified on the collision report form.

**Source: Alberta Registries. Operator Statistics, December 31, 1999.

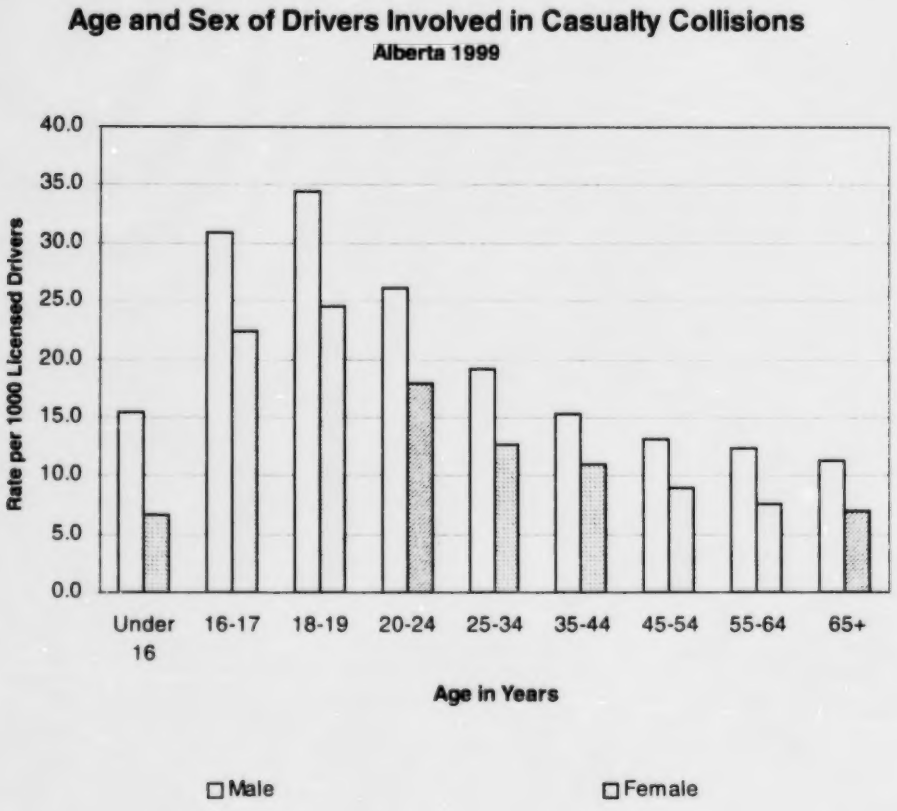

Age and Sex of Drivers Involved in Casualty Collisions
Alberta 1999
Rate per 1000 Licensed Drivers
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Under 16
16-17
18-19
20-24
25-34
35-44
45-54
55-64
65+
Age in Years
Male
Female

Figure 5

Table 4.2

Improper Actions of Drivers Involved in Casualty Collisions*

1999

Improper Actions	Drivers in Fatal Collisions N	%	Drivers in Non-Fatal Injury Collisions N	%	Total Drivers in Casualty Collisions N	%
Followed Too Closely	3	1.2	3400	27.2	3403	26.7
Ran Off Road	104	40.8	1711	13.7	1815	14.2
Left Turn Across Path	12	4.7	1574	12.6	1586	12.4
Stop Sign Violation	36	14.1	1133	9.1	1169	9.2
Disobey Traffic Signal	8	3.1	1042	8.3	1050	8.2
Fail to Yield Right of Way to Pedestrian	7	2.7	399	3.2	406	3.2
Left of Centre	44	17.3	289	2.3	333	2.6
Improper Lane Change	1	0.4	331	2.7	332	2.6
Fail to Yield Right of Way Uncontrolled Intersection	9	3.5	312	2.5	321	2.5
Backed Unsafely	1	0.4	297	2.4	298	2.3
Improper Turn	1	0.4	284	2.3	285	2.2
Yield Sign Violation	7	2.7	267	2.1	274	2.2
Improper Passing	6	2.4	120	1.0	126	1.0
Other	16	6.3	1326	10.6	1342	10.5
Total Number of Drivers	**255**	**100.0**	**12485**	**100.0**	**12740**	**100.0**

Observations

Following too closely (26.7%), running off the road (14.2%) and left turn across path (12.4%) were the most frequently identified improper driver actions contributing to casualty collisions.

*Based on those cases where driver actions were specified on the collision report form.

Note: There was a total of 27098 drivers involved in casualty collisions for which a driver action was specified on the collision report form. 14358 were indicated as driving properly at the time of the collision.

Vehicles

Types of Vehicles

Passenger cars (56.6%) and pickup trucks/vans (22.9%) were the vehicles most frequently involved in total casualty collisions.

Vehicular Factors

Less than 1.0% of vehicles involved in casualty collisions were identified as having a vehicle defect. The most common defects were defective brakes and tire failure.

Point of Impact

The most common point of impact in casualty collisions involved the front of the vehicle. Approximately 44.7% of the impacts involved the centre front.

Table 5.1

Types of Vehicles Involved in Casualty Collisions*

1999

Type of Vehicle	Vehicles in Fatal Collisions N	%	Vehicles in Non-Fatal Injury Collisions N	%	Total Vehicles in Casualty Collisions N	%
Passenger Car	161	33.5	18495	56.9	18656	56.6
Pickup Truck/Van	182	37.8	7363	22.7	7545	22.9
Mini-Van/MPV	51	10.6	4015	12.4	4066	12.3
Bicycle	4	0.8	688	2.1	692	2.1
Truck 4500 kg+	18	3.7	639	2.0	657	2.0
Truck Tractor	41	8.5	445	1.4	486	1.5
Motorcycle	11	2.3	447	1.4	458	1.4
Transit Bus	1	0.2	101	0.3	102	0.3
School Bus	2	0.4	61	0.2	63	0.2
Emergency Vehicle	1	0.2	58	0.2	59	0.2
Off Highway Vehicle	4	0.8	29	0.1	33	0.1
Motorhome	1	0.2	30	0.1	31	0.1
Construction Equipment	--	--	28	0.1	28	0.1
Other Bus	1	0.2	25	0.1	26	0.1
Motorized Snow Vehicle	1	0.2	23	0.1	24	0.1
Farm Equipment	1	0.2	22	0.1	23	0.1
Intercity Bus	--	--	8	0.0	8	0.0
Moped	1	0.2	4	0.0	5	0.0
Other	--	--	4	0.0	4	0.0
Total Number of Vehicles	**481**	**100.0**	**32485**	**100.0**	**32966**	**100.0**

Observations

Passenger cars and pickup trucks/vans were the vehicles most frequently involved in total casualty collisions. Overall, bicycles represented 2.1% and motorcycles 1.4% of the vehicles involved in casualty collisions. Truck tractors were 1.5% of total vehicles in casualty crashes, but 8.5% of vehicles in fatal crashes.

*Based on those cases where type of vehicle was specified on the collision report form.

Table 5.2

Vehicular Factors Involved in Casualty Collisions*

1999

Vehicular Factors	Vehicles in Fatal Collisions N	%	Vehicles in Non-Fatal Injury Collisions N	%	Total Vehicles in Casualty Collisions N	%
No Apparent Defect	361	97.8	26192	99.1	26553	99.1
Defective Brakes	3	0.8	87	0.3	90	0.3
Tires Failed	---	---	36	0.1	36	0.1
Lighting Defect	2	0.5	14	0.1	16	0.1
Improper Load/Shift	---	---	14	0.1	14	0.1
Other	3	0.8	89	0.3	92	0.3
Total Number of Vehicles	**369**	**100.0**	**26432**	**100.0**	**26801**	**100.0**

Observations

Less than 1.0% of vehicles involved in casualty collisions were identified as having a vehicle defect. The most common were defective brakes and tire failure.

*Based on those cases where a vehicle factor was specified on the collision report form. This information does not indicate whether or not a mechanical inspection of the collision-involved vehicle was conducted.

Table 5.3

Point of Impact on Vehicles Involved in Casualty Collisions*

1999

Point of Impact	Vehicles In Fatal Collisions N	%	Vehicles in Non-Fatal Injury Collisions N	%	Total Vehicles in Casualty Collisions N	%
Centre Front	207	44.7	13220	44.7	13427	44.7
Centre Rear	15	3.2	6590	22.3	6605	22.0
Right Front	26	5.6	2099	7.1	2125	7.1
Left Front	27	5.8	2056	7.0	2083	6.9
Rollover	84	18.1	1539	5.2	1623	5.4
Right Side	32	6.9	1196	4.0	1228	4.1
Left Side	38	8.2	1151	3.9	1189	4.0
Right Rear	4	0.9	709	2.4	713	2.4
Left Rear	8	1.7	679	2.3	687	2.3
Attachment	13	2.8	149	0.5	162	0.5
Undercarriage	7	1.5	121	0.4	128	0.4
Top	2	0.4	54	0.2	56	0.2
Total Number of Vehicles	**463**	**100.0**	**29563**	**100.0**	**30026**	**100.0**

Observations

The most common point of impact in casualty collisions involved the front of the vehicle. 44.7% of the impacts involved the centre front, while 22.0% of the impacts involved the centre rear.

*Based on those cases for which the point of impact was specified on the collision report form.

Environment

Location

The majority of fatal crashes (75.4%) occurred in rural areas, whereas the majority of injury (80.6%) and property damage (80.1%) crashes occurred in urban areas.

Surface Conditions

The majority (66.8%) of all casualty collisions occurred when surface conditions were dry. Slush, snow or ice was involved in 12.1% of fatal collisions and 15.6% of non-fatal injury collisions.

Table 6.1

Location of Collisions

1999

Location	Fatal Collisions N	%	Non-Fatal Injury Collisions N	%	Property Damage Only Collisions N	%	Total Collisions N	%
Urban	75	24.6	14024	80.6	62213	80.2	76312	80.1
Rural	230	75.4	3374	19.4	15330	19.8	18934	19.9
Total Number of Collisions	**305**	**100.0**	**17398**	**100.0**	**77543**	**100.0**	**95246**	**100.0**

Observations

Collisions which occurred in rural areas accounted for 75.4% of all fatal crashes. Collisions occurring in urban areas resulted in the highest proportion of non-fatal injury collisions (80.6%) and property damage crashes (80.1%).

Table 6.2

Casualty Collision Occurrence by Surface Condition

1999

Surface Condition	Fatal Collisions N	Fatal Collisions %	Non-Fatal Injury Collisions N	Non-Fatal Injury Collisions %	Total Casualty Collisions N	Total Casualty Collisions %
Dry	220	72.1	11613	66.7	11833	66.8
Slush/Snow/Ice	37	12.1	2718	15.6	2755	15.6
Wet	31	10.2	1756	10.1	1787	10.1
Loose Surface Material	8	2.6	253	1.5	261	1.5
Muddy	--	--	26	0.1	26	0.1
Other	3	1.0	53	0.3	56	0.3
Unspecified	6	2.0	979	5.6	985	5.6
Total Number of Collisions	**305**	**100.0**	**17398**	**100.0**	**17703**	**100.0**

Observations

The majority (66.8%) of casualty collisions occurred when surface conditions were dry. Slush, snow or ice was involved in 12.1% of fatal collisions and 15.6% of non-fatal injury collisions.

Special Types of Vehicles

Motorcycles

- Based on motorcycle registrations, the involvement rate of motorcycles in fatal collisions has decreased in 1999. The involvement rate for non-fatal injury collisions has also decreased since 1998.

- The majority of motorcycle casualty collisions involved male drivers. Motorcycle drivers under the age of 25 had the highest involvement rate per 1000 licensed drivers. In particular 16 and 17 year old motorcycle drivers had an involvement rate per 1000 licensed driver of 37.7, a rate over two times greater than that of the 20-24 year old motorcycle drivers.

- Compared to drivers involved in total casualty collisions, motorcycle drivers were more likely to run off the road or pass improperly. However, motorcycle drivers were less likely to follow too closely, make an unsafe left turn or disobey a traffic control device.

- Compared to drivers involved in all types of vehicle casualty collisions, motorcycle drivers were more likely to have consumed alcohol before the crash.

- Vehicular factors were identified for 2.5% of motorcycles involved in casualty collisions compared to 0.9% for all types of vehicles involved in casualty collisions.

- The majority of casualty collisions involving motorcycles occurred on dry roads.

Table 7.1

Motorcycles Involved in Casualty Collisions

1995 - 1999

Number of Motorcycles	1999	1998	1997	1996	1995
Fatal	11	24	7	11	15
Non-Fatal Injury	447	463	385	334	429
Total Number of Motorcycles Involved in Casualty Collisions	**458**	**487**	**392**	**345**	**444**
Casualties*					
Number Killed	10	26	8	11	15
Number Injured	509	528	454	397	518
Total Casualties in Collisions Involving Motorcycles	**519**	**554**	**462**	**408**	**533**
Number of Motorcycles Involved in Casualty Collisions Per 10,000 Registered Motorcycles**					
Fatal Collisions	2.8	6.4	2.0	3.2	4.2
Non-Fatal Injury Collisions	112.9	123.4	109.0	98.0	121.4

Observations

Based on motorcycle registrations, the involvement rate of motorcycles in fatal and injury collisions has declined in 1999.

*This refers to the total number of people killed and injured in collisions in which a motorcycle was involved. It does not refer to the number of motorcyclists killed and injured.

**Source: Based on vehicle registration statistics, Alberta Registries. December 31, 1999.

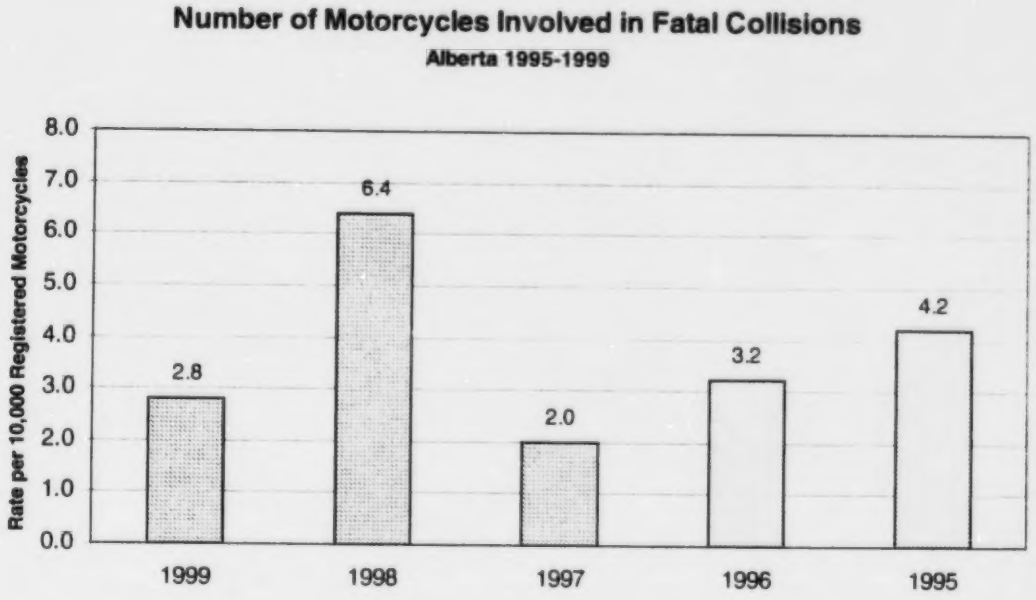

Number of Motorcycles Involved in Fatal Collisions
Alberta 1995-1999
Rate per 10,000 Registered Motorcycles
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
2.8
6.4
2.0
3.2
4.2
1999
1998
1997
1996
1995

Figure 6

Table 7.2

Age and Sex of Motorcycle Drivers Involved in Casualty Collisions

1999

Age of Motorcycle Driver	Male		Female		Total*		Rate Per 1,000 Licensed Motorcycle Drivers**
	N	%	N	%	N	%	
Under 16	6	1.3	1	0.2	7	1.5	
16 - 17	12	2.6	--	--	12	2.6	37.7
18 - 19	39	8.5	--	--	39	8.5	36.7
20 - 24	93	20.3	5	1.1	98	21.4	13.2
25 - 34	130	28.4	9	2.0	139	30.3	4.0
35 - 44	75	16.4	13	2.8	88	19.2	1.3
45 - 54	51	11.1	6	1.3	57	12.4	1.1
55 - 64	11	2.4	1	0.2	12	2.6	0.8
65 and over	4	0.9	--	--	4	0.9	0.5
Unspecified	---	---	---	---	2	0.4	
Total Number of Motorcycle Drivers	**421**	**91.9**	**35**	**7.6**	**458**	**100.0**	

Observations

The majority of motorcycle casualty collisions involved male drivers. Based on involvement per 1,000 licensed operators, motorcycle drivers under the age of 25 were most likely to be involved in collisions. In particular, 16 and 17 year old motorcycle drivers had the highest involvement rate per 1,000 licensed motorcyclists. These age and sex comparisons are limited due to the lack of driving exposure data. That is, in order to make valid age comparisons, it is important to take into account the number of kilometres driven annually by each age and sex group of motorcycle operators.

Note: In Alberta, Class 6 (motorcycle) licenses are not issued to operators under 16 years of age.

*Total includes drivers whose sex was not specified on the collision report form.

**Source: Alberta Registries. Operator Statistics, December 31, 1999.

Table 7.3

Improper Actions of Motorcycle Drivers Involved in Casualty Collisions*

1999

Improper Actions of Motorcycle Driver	N	%	Driver Actions in Total Casualty Collisions (All Vehicle Types) %
Ran Off Road	66	39.1	14.2
Followed Too Closely	24	14.2	26.7
Improper Passing	12	7.1	1.0
Left of Center	7	4.1	2.6
Improper Lane Change	6	3.6	2.6
Disobey Traffic Signal	5	3.0	8.2
Stop Sign Violation	3	1.8	9.2
Left Turn Across Path	3	1.8	12.4
Failed to Yield Right of Way Uncontrolled Intersection	2	1.2	2.5
Improper Turn	2	1.2	2.2
Yield Sign Violation	1	0.6	2.2
Failed to Yield Right of Way to Pedestrian	1	0.6	3.2
Other	37	21.9	12.8
Total Number of Motorcycle Drivers	**169**	**100.0**	**100.0**

Observations

Compared to drivers involved in total casualty collisions, motorcycle drivers were more likely to run off the road or pass improperly. However, motorcycle drivers were less likely to follow too closely, make an unsafe left turn or disobey a traffic control device.

*Based on those cases where driver actions were specified on the collision report form.

Note: There was a total of 372 motorcycle drivers involved in casualty collisions for which a driver action was specified on the collision report form. 203 were indicated as driving properly at the time of the collision.

Table 7.4

Condition of Motorcycle Drivers* Involved in Casualty Collisions

1999

Condition of Motorcycle Driver	N	%	Driver Condition in Total Casualty Collisions (All Vehicle Types) %
Normal	353	88.7	92.7
Had Been Drinking	30	7.5	3.0
Alcohol Impaired	12	3.0	2.9
Total Alcohol Involvement	**42**	**10.5**	**5.9**
Fatigued/Asleep	1	0.3	0.7
Other	2	0.5	0.7
Total Number of Motorcycle Drivers	**398**	**100.0**	

Observations

The motorcycle driver's condition was a contributory factor for 11.3% of the involved motorcycle drivers. Compared to drivers involved in total casualty collisions, motorcycle drivers were more likely to have consumed alcohol prior to the crash.

*Based on those cases where driver condition was specified on the collision report form.

Table 7.5

Motorcycle Vehicular Factors* in Casualty Collisions

1999

Vehicular Factors	N	%	Vehicular Factors in Total Casualty Collisions (All Vehicle Types) %
No Apparent Defect	391	97.5	99.1
Tires Failed	2	0.5	0.1
Defective Brakes	1	0.2	0.3
Other	7	1.7	0.5
Total Number of Motorcycles	**401**	**100.0**	

Observations

Vehicular factors were identified for 2.5% of the motorcycles involved in casualty collisions, compared to 0.9% for all types of vehicles involved in casualty collisions.

*Based on those cases where a vehicular factor was specified on the collision report form. This does not indicate that a mechanical inspection of the collision-involved motorcycle was conducted.

Table 7.6

Casualty Collisions Involving Motorcycles:

Month of Occurrence

1999

Month	N	%
January	---	---
February	1	0.2
March	12	2.7
April	45	10.1
May	69	15.5
June	69	15.5
July	66	14.8
August	78	17.5
September	55	12.3
October	40	9.0
November	7	1.6
December	4	0.9
Total Number of Collisions	**446**	**100.0**

Observations

The month of August recorded the highest proportion of casualty crashes involving motorcycles.

Table 7.7

Casualty Collisions Involving Motorcycles:

Road Surface Condition

1999

Road Surface Condition	N	%
Dry	396	88.8
Wet	22	4.9
Loose Surface Material	13	2.9
Slush/Snowy/Icy	2	0.4
Other	1	0.2
Unspecified	12	2.7
Total Number of Collisions	**446**	**100.0**

Observations

The majority of casualty collisions involving motorcycles occurred on dry roads. Wet roads were the scene of 4.9% of motorcycle casualty collisions. Loose material on the road surface was involved in 2.9% of motorcycle casualty crashes.

Special Types of Vehicles

Truck Tractors

- In 1999 there were 48 persons killed and 606 injured in collisions involving truck tractors. This represents a decrease in casualties from 1998.
- Compared to drivers of other vehicles, truck tractor drivers were more likely to run off the road, or make an improper turn. However, operators of truck tractors were less likely than other vehicle operators to follow too closely, disobey a traffic control device or make a left turn across the path of an oncoming vehicle.
- Truck tractor drivers were less likely to consume alcohol before the crash than were drivers in total casualty collisions.
- Vehicular factors were more likely to be present in truck tractor casualty collisions than in total casualty collisions.
- The occurrence of casualty collisions involving truck tractors was highest in the month of January.

Table 7.8

Truck Tractors Involved in Casualty Collisions

1995- 1999

Number of Truck Tractors	**1999**	**1998**	**1997**	**1996**	**1995**
Fatal	41	48	68	35	34
Non-Fatal Injury	445	523	545	464	385
Total Number of Truck Tractors Involved in Casualty Collisions	**486**	**571**	**613**	**499**	**419**
Casualties*					
Number Killed	48	57	86	45	51
Number Injured	606	687	741	645	541
Total Casualties in Collisions Involving Truck Tractors	**654**	**744**	**827**	**690**	**592**

Observations

In 1999 there were 48 persons killed and 606 injured in collisions involving truck tractors. This represents a decrease in casualties from 1998. The total number of truck tractors involved in casualty crashes decreased in 1999 standing at 486 compared to the five-year low of 419 recorded in 1995.

*This refers to the total number of people killed and injured in collisions in which a truck tractor was involved. It does not refer to the number of truck tractor drivers killed and injured.

Table 7.9

Casualty Collisions Involving Truck Tractors:
Improper Actions* of Truck Tractor Drivers Involved in Casualty Collisions

1999

Improper Driver Actions	N	%	Driver Actions in Total Casualty Collisions (All Types of Vehicles) %
Ran Off Road	60	33.7	14.2
Followed Too Closely	37	20.8	26.7
Stop Sign Violation	12	6.7	9.2
Left Turn Across Path	10	5.6	12.4
Disobey Traffic Signal	13	7.3	8.2
Left of Center	6	3.4	2.6
Improper Passing	2	1.1	1.0
Improper Lane Change	4	2.2	2.6
Failed to Yield Right of Way Uncontrolled Intersection	2	1.1	2.5
Yield Sign Violation	3	1.7	2.2
Backed Unsafely	3	1.7	2.3
Improper Turn	6	3.4	2.2
Other	20	11.2	13.7
Total Number of Drivers	**178**	**100.0**	

Observations

Compared to drivers of other vehicles, truck tractor drivers were more likely to run off the road, or make an improper turn. However, operators of truck tractors were less likely than other vehicle operators to follow too closely, disobey a traffic control device or make a left turn across the path of an oncoming vehicle.

*Based on those cases where driver actions were specified on the collision report form.

Note: There was a total of 406 truck-tractor drivers involved in casualty collisions for which a driver action was specified on the collision report form. 228 were indicated as driving properly at the time of the collision.

Table 7.10

Casualty Collisions Involving Truck Tractors:

Condition* of Truck Tractor Drivers Involved in Casualty Collisions

1999

Driver Condition	N	%	Driver Condition in Total Casualty Collisions (All Types of Vehicles) %
Normal	388	94.9	92.7
Had Been Drinking	5	1.2	3.0
Alcohol Impaired	4	1.0	2.9
Total Alcohol Involvement	**9**	**2.2**	**5.9**
Fatigued/Asleep	11	2.7	0.7
Other	1	0.2	0.7
Total Number of Drivers	**409**	**100.0**	

Observations

The condition of the truck tractor driver was a contributory factor for 5.1% of the drivers involved. Truck tractor drivers were less likely to consume alcohol before the crash than were drivers involved in total casualty collisions. However, they were more likely to have been fatigued or asleep at the time of the crash.

*Based on those cases where driver condition was specified on the collision report form.

Table 7.11

Casualty Collisions Involving Truck Tractors:

Vehicular Factors* of Truck Tractors Involved in Casualty Collisions

1999

Vehicular Factors	N	%	Vehicular Factors in Total Casualty Collisions (All Types of Vehicles) %
No Apparent Defect	403	97.6	99.1
Defective Brakes	5	1.2	0.3
Improper Load/Shift	2	0.5	0.1
Tires Failed	1	0.2	0.1
Other	2	0.5	0.4
Total Number of Truck Tractors	**413**	**100.0**	

Observations

Vehicular factors were identified for 2.4% of truck tractors involved in casualty collisions. Vehicular factors were more likely to be present in truck tractor collisions than in total casualty collisions.

*Based on those cases where vehicular factor was specified on the collision report form. This information does not indicate whether or not a mechanical inspection of the collision-involved truck tractor was conducted.

Table 7.12

Casualty Collisions Involving Truck Tractors:

Month of Occurrence

1999

Month	N	%
January	57	12.2
February	33	7.0
March	42	9.0
April	20	4.3
May	24	5.1
June	26	5.5
July	39	8.3
August	38	8.1
September	48	10.2
October	53	11.3
November	40	8.5
December	49	10.4
Total Number of Collisions	**469**	**100.0**

Observations

The occurrence of casualty collisions involving truck tractors was highest in the month of January. The lowest number of truck tractor casualty collisions occurred during April.

Special Types of Vehicles

Trains

- In 1999, 4 people were killed and 27 people were injured in crashes in which a train was involved. The number of casualties involving trains has decreased from 1998.
- The largest number of casualty collisions involving trains occurred in the month of November.
- A large percentage of drivers involved in collisions with a train disobeyed a traffic control device.

Table 7.13

Trains Involved in Casualty Collisions

1995 - 1999

Number of Trains	1999	1998	1997	1996	1995
Fatal	3	5	3	5	7
Non-Fatal Injury	19	26	29	33	30
Total Number of Trains Involved in Casualty Collisions	**22**	**31**	**32**	**38**	**37**
Casualties*					
Number Killed	4	5	4	6	9
Number Injured	27	50	39	42	41
Total Casualties in Collisions Involving Trains	**31**	**55**	**43**	**48**	**50**

Observations

The number of trains involved in casualty collisions decreased from 1998. The number of casualties resulting from these collisions has also decreased.

*This refers to the total number of people killed and injured in collisions involving a train.

Table 7.14

Casualty Collisions Involving Trains:

Month of Occurrence

1999

Month	Fatal Collisions N	Fatal Collisions %	Non-Fatal Injury Collisions N	Non-Fatal Injury Collisions %	Total Casualty Collisions N	Total Casualty Collisions %
January	--	--	3	15.8	3	13.6
February	--	--	2	10.5	2	9.1
March	1	33.3	--	--	1	4.5
April	--	--	1	5.3	1	4.5
May	--	--	2	10.5	2	9.1
June	--	--	--	--	--	--
July	--	--	--	--	--	--
August	--	--	1	5.3	1	4.5
September	1	33.3	--	--	1	4.5
October	--	--	2	10.5	2	9.1
November	1	33.3	4	21.1	5	22.7
December	--	--	4	21.1	4	18.2
Total Number of Collisions	**3**	**100.0**	**19**	**100.0**	**22**	**100.0**

Observations

The largest number of casualty collisions involving trains occurred in the month of November.

Table 7.15

Casualty Collisions Involving Trains:

Actions* of Drivers Involved in Casualty Collisions with Trains

1999

Driver Actions	Drivers in Fatal Collisions N	%	Driver in Non-Fatal Injury Collisions N	%	Total Drivers in Casualty Collisions N	%
Disobey Traffic Signal	--	--	8	57.1	8	50.0
Failed to Yield Right of Way Uncontrolled Intersection	1	50.0	1	7.1	2	12.5
Stop Sign Violation	--	--	2	14.3	2	12.5
Left Turn Across Path	--	--	1	7.1	1	6.3
Ran Off Road	--	--	1	7.1	1	6.3
Driving Properly	--	--	1	7.1	1	6.3
Other	1	50.0	--	--	1	6.3
Total Number of Drivers	**2**	**100.0**	**14**	**100.0**	**16**	**100.0**

Observations

A large percentage of drivers involved in collisions with a train disobeyed a traffic control device.

*Based on those cases where driver actions were specified on the collision report form.

Pedestrians

- Pedestrian casualty collisions were more likely to occur from September to December. November accounted for the largest number of collisions, while January and August experienced the least number of pedestrian crashes.
- Pedestrian casualty collisions were most likely to occur on Friday and least likely to occur on Sunday.
- Pedestrian casualty collisions were most likely to occur during the evening rush-hour period (3:00 p.m. to 6:59 p.m.).
- 37.6% of the drivers in collisions involving a pedestrian were recorded as failing to yield the right of way to the pedestrian.
- The casualty rate per population was highest for pedestrians between the ages of 15 and 19.
- Of pedestrians involved in injury collisions, 15.9% had consumed alcohol before the collision, compared to 27.6% involved in fatal collisions.
- Of those pedestrians who had consumed alcohol prior to the collision, the highest rate of involvement per 10,000 population was for the age group 20-24 years of age.

Table 8.1

Casualty Collisions Involving Pedestrians:

Month of Occurrence

1999

Month of Collision	N	%
January	80	6.8
February	90	7.7
March	101	8.6
April	82	7.0
May	87	7.4
June	89	7.6
July	91	7.8
August	80	6.8
September	125	10.6
October	104	8.9
November	136	11.6
December	108	9.2
Unspecified	1	0.1
Total Number of Collisions	**1174**	**100.0**

Observations

Pedestrian casualty collisions were more likely to occur from September to December. November accounted for the largest number of collisions, while January and August experienced the least number of pedestrian crashes.

Table 8.2

Casualty Collisions Involving Pedestrians:

Day of Week

1999

Day of Week	N	%
Monday	163	13.9
Tuesday	159	13.5
Wednesday	163	13.9
Thursday	193	16.4
Friday	220	18.7
Saturday	164	14.0
Sunday	111	9.5
Unspecified	1	0.1
Total Number of Collisions	**1174**	**100.0**

Observations

Pedestrian casualty collisions were most likely to occur on Friday and least likely to occur on Sunday.

Table 8.3

Casualty Collisions Involving Pedestrians:

Time Period

1999

Time Period	N	%
11:00 p.m. - 2:59 a.m.	106	9.0
3:00 a.m. - 6:59 a.m.	33	2.8
7:00 a.m. - 10:59 a.m.	192	16.4
11:00 a.m. - 2:59 p.m.	246	21.0
3:00 p.m. - 6:59 p.m.	356	30.3
7:00 p.m. - 10:59 p.m.	232	19.8
Unspecified	9	0.8
Total Number of Collisions	**1174**	**100.0**

Observations

Pedestrian casualty collisions were most likely to occur during the evening rush-hour period from 3:00 p.m. to 6:59 p.m. These collisions were least likely to occur during the early morning hours (3:00 a.m. to 6:59 a.m.).

Table 8.4

Casualty Collisions Involving Pedestrians:

Location

1999

Location	N	%
Urban	1110	94.5
Rural	64	5.5
Total Number of Collisions	**1174**	**100.0**

Observations

The majority of pedestrian casualty collisions (94.5%) occurred in urban areas. Only 5.5% occurred in rural areas.

Table 8.5

Casualty Collisions Involving Pedestrians:

Actions* of Drivers Involved in Casualty Collisions with Pedestrians

1999

Driver Actions	N	%
Driving Properly	391	40.3
Failed to Yield Right of Way To Pedestrian	365	37.6
Backed Unsafely	84	8.7
Ran Off Road	17	1.8
Stop Sign Violation	10	1.0
Disobey Traffic Signal	9	0.9
Followed Too Closely	7	0.7
Failed to Yield Right of Way Uncontrolled Intersection	7	0.7
Improper Turn	6	0.6
Improper Passing	5	0.5
Left Turn Across Path	5	0.5
Improper Lane Change	4	0.4
Left of Centre	3	0.3
Yield Sign Violation	3	0.3
Other	55	5.7
Total Number of Drivers	**971**	**100.0**

Observations

40.3% of the drivers involved in pedestrian crashes were recorded as driving properly. However, 37.6% of the drivers involved in pedestrian casualty collisions failed to yield the right of way to the pedestrian.

*Based on those cases where driver actions were specified on the collision report form.

Table 8.6

Age of Pedestrian Casualties

1999

Age in Years	Pedestrians Killed N	Pedestrians Injured N	Total Pedestrian Casualties N	%	Pedestrian Casualty Rate Per 10,000 Population*
Under 5	1	31	32	2.6	1.6
5 – 9	1	77	78	6.3	3.6
10 – 14	--	125	125	10.1	5.7
15 – 19	2	161	163	13.1	7.5
20 – 24	2	142	144	11.6	6.5
25 – 29	2	104	106	8.5	4.7
30 – 34	--	103	103	8.3	4.4
35 – 44	6	170	176	14.2	3.3
45 – 54	4	123	127	10.2	3.3
55 – 64	1	64	65	5.2	2.9
65 and over	13	88	101	8.1	3.4
Unspecified	--	22	22	1.8	
Total Number of Pedestrian Casualties	**32**	**1210**	**1242**	**100.0**	

Observations

The casualty rate per population was highest for pedestrians between the ages of 15 and 19. The lowest casualty rate was recorded for persons under 5 years of age.

*Source: Based on estimates of the Alberta population by age groups and sex, July 1, 1999, Statistics Canada.

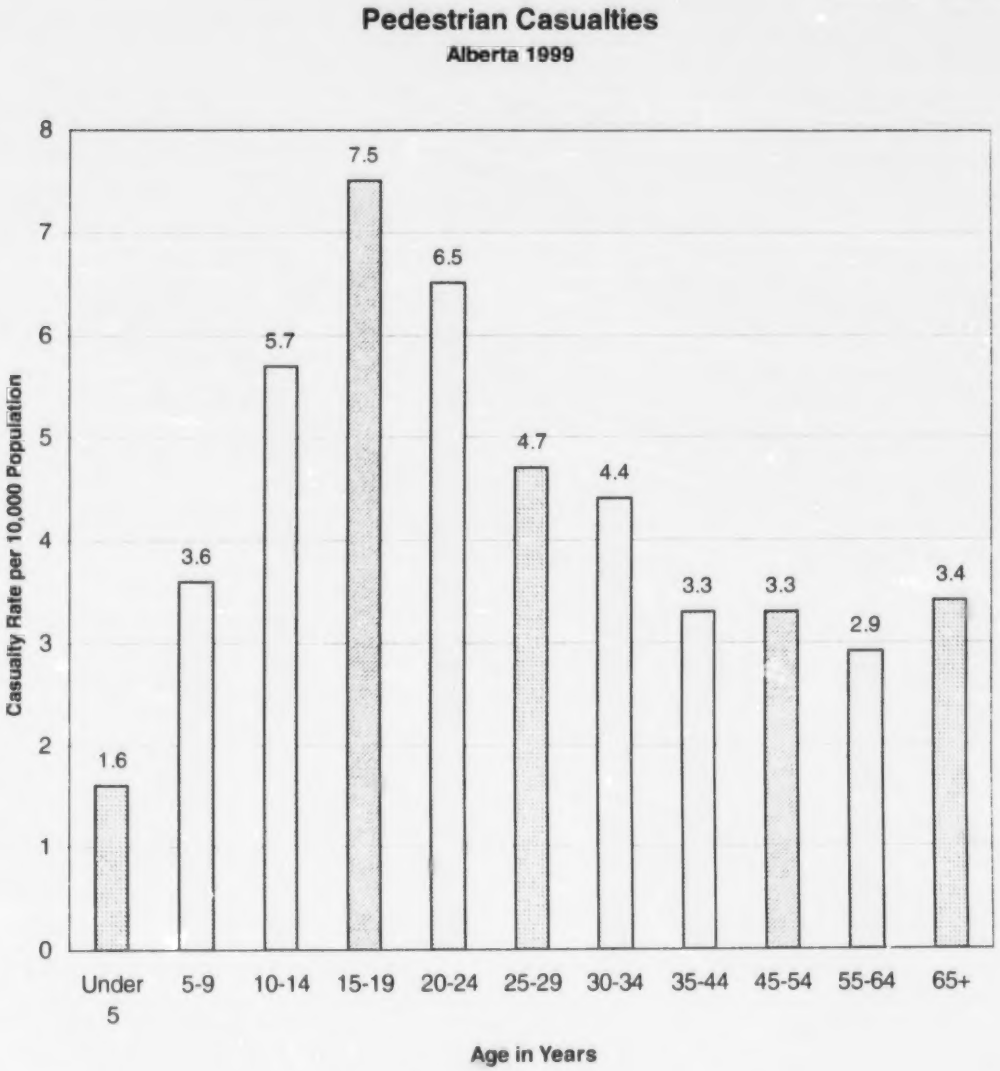

Pedestrian Casualties
Alberta 1999
Casualty Rate per 10,000 Population
0
1
2
3
4
5
6
7
8
1.6
3.6
5.7
7.5
6.5
4.7
4.4
3.3
3.3
2.9
3.4
Under 5
5-9
10-14
15-19
20-24
25-29
30-34
35-44
45-54
55-64
65+
Age in Years

Figure 7

Table 8.7

Condition of Pedestrians* Involved in Casualty Collisions

1999

Condition of Pedestrian	Pedestrians in Fatal Collisions N	%	Pedestrians in Non-Fatal Injury Collisions N	%	Total Pedestrians in Casualty Collisions N	%
Normal	21	72.4	764	82.6	785	82.3
Had Been Drinking	5	17.2	82	8.9	87	9.1
Alcohol Impaired	3	10.3	65	7.0	68	7.1
Total Alcohol Involvement	**8**	**27.6**	**147**	**15.9**	**155**	**16.2**
Other	---	---	14	1.5	14	1.5
Total Number of Pedestrians	**29**	**100.0**	**925**	**100.0**	**954**	**100.0**

Observations

Of pedestrians involved in injury collisions, 15.9% had consumed alcohol before the collision, compared to 27.6% involved in fatal collisions. As the severity of the collision increased, the involvement of alcohol also increased.

*Based only on those cases where pedestrian condition was specified on the collision report form.

Table 8.8

Age of Drinking Pedestrians* Involved in Casualty Collisions

1999

Age in Years	N	%	Rate per 10,000 Population**
10-14	1	0.6	0.0
15 - 19	16	10.3	0.7
20 - 24	36	23.2	1.6
25 - 29	21	13.5	0.9
30 - 34	22	14.2	0.9
35 - 44	33	21.3	0.6
45 - 54	12	7.7	0.3
55 - 64	5	3.2	0.2
65 and over	5	3.2	0.2
Unspecified	4	2.6	
Total Number of Pedestrian Casualties	**155**	**100.0**	

Observations

Of those pedestrians who had consumed alcohol prior to the collision, the highest rate of involvement per 10,000 population was for the age group 20-24 years of age.

*Based on those cases where Pedestrian Condition was specified on the collision report form.

**Source: Based on estimates of the Alberta population by age groups and sex, July 1, 1999, Statistics Canada.

Bicyclists

- Casualty collisions involving bicycles were more likely to occur in the month of June.
- Weekdays experienced the most casualty collisions involving bicycles. As well, the largest number of these crashes (42.5%) occurred during the evening rush-hour period.
- Young bicyclists, 10-14 years of age, were the group most frequently involved in bicycle casualty crashes.
- Compared to operators of all vehicles in casualty collisions, bicyclists were more likely to fail to yield right-of-way at an uncontrolled intersection, disobey a traffic signal, or be left of centre.
- 4.4% of bicyclists involved in casualty collisions had consumed alcohol before the crash.

Table 9.1

Casualty Collisions Involving Bicycles:

Month of Occurrence

1999

Month	N	%
January	6	0.9
February	14	2.0
March	30	4.3
April	63	9.1
May	85	12.3
June	102	14.8
July	89	12.9
August	87	12.6
September	95	13.8
October	68	9.9
November	33	4.8
December	18	2.6
Total Number of Collisions	**690**	**100.0**

Observations

The majority of casualty crashes involving bicycles occurred during the month of June.

Table 9.2

Casualty Collisions Involving Bicycles:

Day of Week

1999

Day of Week	N	%
Monday	100	14.5
Tuesday	132	19.1
Wednesday	103	14.9
Thursday	127	18.4
Friday	105	15.2
Saturday	63	9.1
Sunday	60	8.7
Total Number of Collisions	**690**	**100.0**

Observations

Casualty collisions involving bicycles were more likely to occur on weekdays.

Table 9.3

Casualty Collisions Involving Bicycles:

Time Period

1999

Time Period	N	%
11:00 p.m. - 2:59 a.m.	21	3.0
3:00 a.m. - 6:59 a.m.	8	1.2
7:00 a.m. - 10:59 a.m.	113	16.4
11:00 a.m. - 2:59 p.m.	139	20.1
3:00 p.m. - 6:59 p.m.	293	42.5
7:00 p.m. - 10:59 p.m.	110	15.9
Unspecified	6	0.9
Total Number of Collisions	**690**	**100.0**

Observations

The largest proportion of casualty crashes (42.5%) involving bicycles occurred during the evening rush-hour period of 3:00 p.m. - 6:59 p.m.

Table 9.4

Age and Sex of Bicyclists Involved in Casualty Collisions

1999

Age of Bicyclist	Male		Female		Total*	
	N	%	N	%	N	%
Under 5	4	0.6	--	--	4	0.6
5 - 9	59	8.5	17	2.5	78	11.3
10 - 14	110	15.9	36	5.2	146	21.1
15 - 19	79	11.4	24	3.5	104	15.0
20 - 24	55	7.9	21	3.0	76	11.0
25 - 29	40	5.8	18	2.6	58	8.4
30 - 34	48	6.9	8	1.2	56	8.1
35 - 44	62	9.0	22	3.2	84	12.1
45 - 54	31	4.5	8	1.2	39	5.6
55 - 64	17	2.5	1	0.1	18	2.6
65 and over	7	1.0	3	0.4	10	1.4
Unspecified	15	2.2	2	0.3	19	2.7
Total Number of Bicyclists	**527**	**76.2**	**160**	**23.1**	**692**	**100.0**

Observations

The majority of bicycle casualty collisions involved male bicyclists. The 10-14 year old age group was most frequently involved in these collisions.

*Total includes bicyclists whose sex was not specified on the collision report form.

Table 9.5

Improper Actions of Bicyclists Involved in Casualty Collisions*

1999

Improper Actions of Bicyclist	N	%	Driver Actions In Total Casualty Collisions (All Vehicle Types) %
Failed to Yield Right of Way Uncontrolled Intersection	47	17.4	2.5
Disobey Traffic Signal	36	13.3	8.2
Left of Center	19	7.0	2.6
Left Turn Across Path	18	6.7	12.4
Stop Sign Violation	15	5.6	9.2
Improper Turn	8	3.0	2.2
Improper Passing	6	2.2	1.0
Improper Lane Change	6	2.2	2.6
Yield Sign Violation	5	1.9	2.2
Ran Off Road	5	1.9	14.2
Followed Too Closely	2	0.7	26.7
Failed to Yield Right of Way to Pedestrian	1	0.4	3.2
Other	102	37.8	12.8
Total Number of Bicyclists	**270**	**100.0**	

Observations

Compared to operators of all vehicles in casualty collisions, bicyclists were more likely to fail to yield right of way at an uncontrolled intersection, disobey a traffic signal or be left of centre.

*Based on those cases where driver actions were specified on the collision report form.

Note: There was a total of 464 bicyclists involved in casualty collisions for which a driver action was specified on the collision report form. 194 were indicated as driving properly at the time of the collision.

Table 9.6

Condition of Bicyclists Involved in Casualty Collisions*

1999

Condition of Bicyclist	N	%
Normal	557	95.2
Had Been Drinking	15	2.6
Alcohol Impaired	11	1.9
Total Alcohol Involvement	**26**	**4.4**
Other	2	0.3
Total Number of Bicyclists	**585**	**100.0**

Observations

4.4% of bicyclists involved in casualty collisions had consumed alcohol before the crash.

*Based on those cases where bicyclist condition was specified on the collision report form.

Traffic Safety Issues

Alcohol Involvement

- A total of 5.6% of drivers involved in injury crashes were judged to have consumed alcohol prior to the crash, compared to 22.8% of drivers involved in fatal collisions. As the severity of the collision increased, the involvement of alcohol dramatically increased.
- In terms of involvement per 1,000 licensed drivers, males between 18 and 21 years of age were most likely to have been drinking before the crash. There were over five times as many male drivers as female drivers who had consumed alcohol prior to the collision.
- In 1999, alcohol related casualty crashes were most likely to have occurred in August, on Saturday, and between 11:00 p.m. and 2:59 a.m.
- Figure 8 provides a graphic representation of the involvement of drinking drivers in casualty collisions over the past five years, 1995-1999.

Table 10.1

Condition of Drivers in Casualty Collisions*

1999

Condition of Driver	Drivers in Fatal Collisions N	%	Drivers in Non-Fatal Injury Collisions N	%	Total Drivers in Casualty Collisions N	%
Normal	294	75.4	23920	92.9	24214	92.7
Had Been Drinking	39	10.0	745	2.9	784	3.0
Alcohol Impaired	50	12.8	695	2.7	745	2.9
Total Alcohol Involvement	**89**	**22.8**	**1440**	**5.6**	**1529**	**5.9**
Impaired by Drugs	1	0.3	31	0.1	32	0.1
Fatigued/Asleep	5	1.3	181	0.7	186	0.7
Other	1	0.3	164	0.6	165	0.6
Total Number of Drivers	**390**	**100.0**	**25736**	**100.0**	**26126**	**100.0**

Observations

Of drivers involved in injury collisions, 5.6% had consumed alcohol before the crash, compared to 22.8% in fatal collisions. As the severity of the collision increased, the involvement of alcohol dramatically increased. Overall, 5.9% of drivers involved in casualty collisions were judged to have consumed alcohol before the crash.

*Based on those cases where driver condition was specified on the collision report form. These numbers do not include bicyclists (see Table 9.6, page 65).

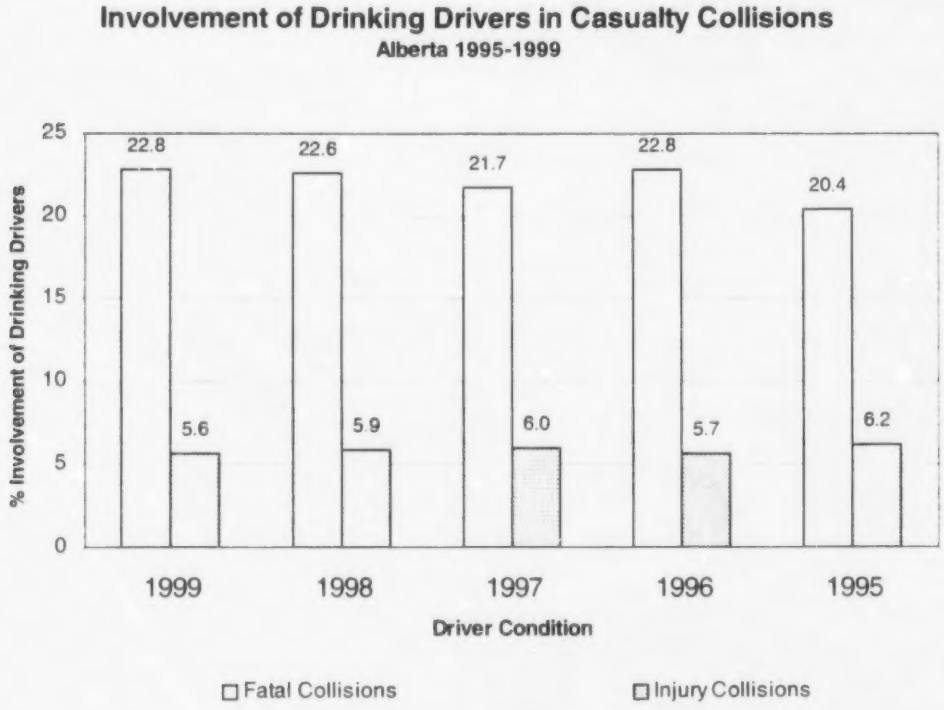

Involvement of Drinking Drivers in Casualty Collisions
Alberta 1995-1999
% Involvement of Drinking Drivers
25
20
15
10
5
0
22.8
5.6
22.6
5.9
21.7
6.0
22.8
5.7
20.4
6.2
1999
1998
1997
1996
1995
Driver Condition
Fatal Collisions
Injury Collisions

Figure 8

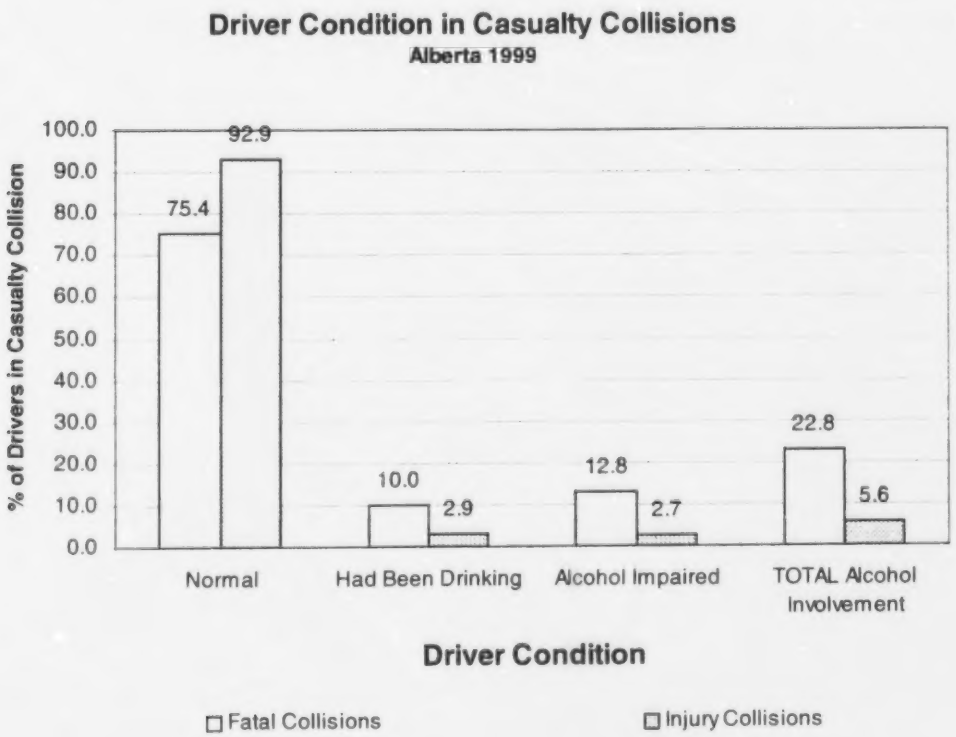

Driver Condition in Casualty Collisions
Alberta 1999
% of Drivers in Casualty Collision
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
75.4
92.9
10.0
2.9
12.8
2.7
22.8
5.6
Normal
Had Been Drinking
Alcohol Impaired
TOTAL Alcohol Involvement
Driver Condition
Fatal Collisions
Injury Collisions

Figure 9

Table 10.2

Age and Sex of Drinking Drivers in Casualty Collisions*

1999

Age in Years	Male N	%	Rate Per 1000** Licensed Drivers	Female N	%	Rate Per 1000** Licensed Drivers	Total* N	%	Rate Per 1000** Licensed Drivers
Under 16	1	0.1	0.1	4	0.3	0.3	5	0.3	0.2
16 - 17	33	2.2	1.0	15	1.0	0.5	48	3.1	0.8
18 - 19	136	8.9	3.4	41	2.7	1.2	177	11.6	2.4
20 - 21	144	9.4	3.5	21	1.4	0.6	165	10.8	2.1
22 - 24	147	9.6	2.1	25	1.6	0.4	172	11.2	1.3
25 - 29	183	12.0	1.5	25	1.6	0.2	208	13.6	0.9
30 - 34	171	11.2	1.4	29	1.9	0.3	200	13.1	0.9
35 - 44	269	17.6	1.0	53	3.5	0.2	322	21.1	0.6
45 - 54	110	7.2	0.5	15	1.0	0.1	125	8.2	0.3
55 - 64	50	3.3	0.4	6	0.4	0.1	56	3.7	0.3
65 and over	27	1.8	0.2	2	0.1	0.0	29	1.9	0.1
Unspecified	8	0.5	--	--	--	--	22	1.4	--
Total Drivers	**1279**	**83.6**		**236**	**15.4**		**1529**	**100.0**	

Observations

Of those collision-involved drivers who had consumed alcohol, there were over five times as many male drivers as female drivers. The majority were male drivers under the age of 45. In terms of involvement per 1,000 licensed drivers, males 18-21 years of age were more likely to have consumed alcohol prior to a casualty collision than any other age group.

Drinking drivers include those indicated on the collision report form as having been drinking prior to the crash and those who were alcohol-impaired at the time of the crash. Whether or not the driver was actually charged is not taken into consideration by the collision report form.

*Includes only drivers whose age and/or sex was specified on the collision report form. Total includes drinking drivers whose sex was not specified on the collision report form.

**Source: Alberta Registries. Operator Statistics, December 31, 1999.

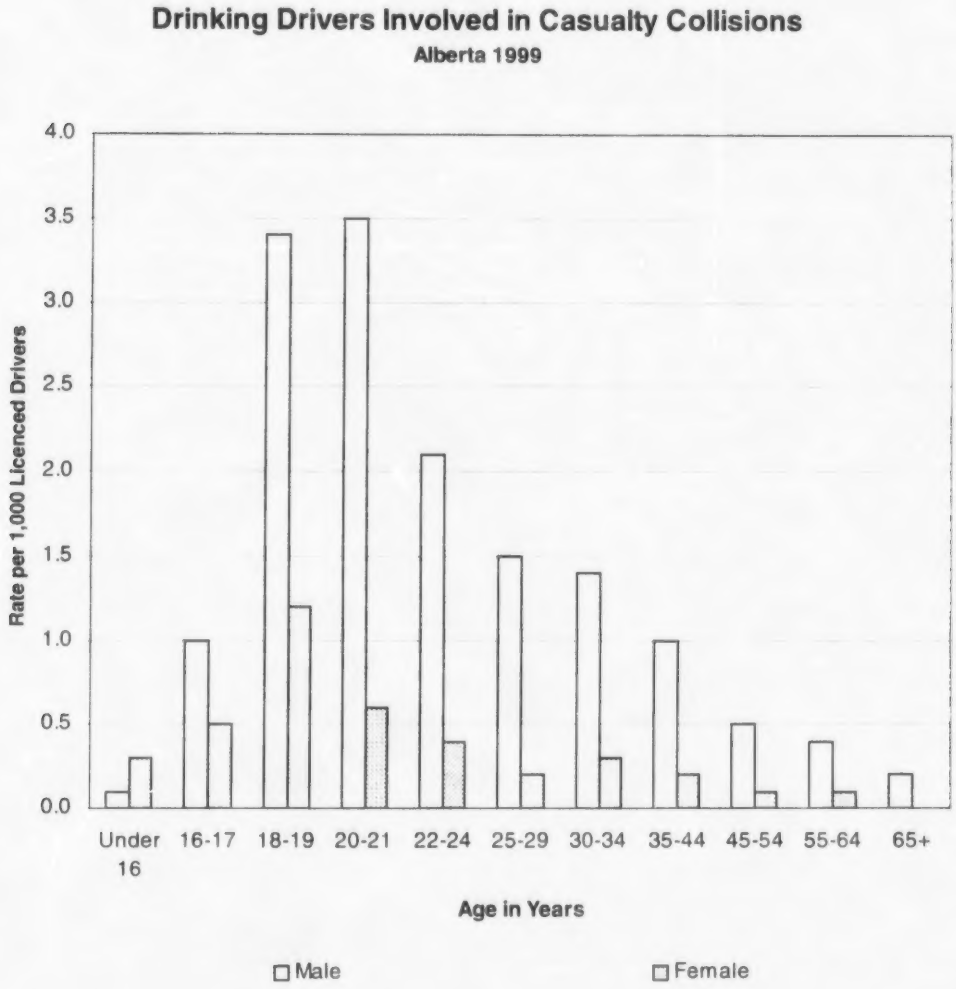

Drinking Drivers Involved in Casualty Collisions
Alberta 1999
Rate per 1,000 Licenced Drivers
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Under 16
16-17
18-19
20-21
22-24
25-29
30-34
35-44
45-54
55-64
65+
Age in Years
Male
Female

Figure 10

Table 10.3

Alcohol-Involved Casualty Collisions:

Month of Occurrence

1999

Month	Fatal Collisions N	Fatal Collisions %	Non-Fatal Injury Collisions N	Non-Fatal Injury Collisions %	Total Casualty Collisions N	Total Casualty Collisions %
January	2	2.3	68	4.8	70	4.7
February	2	2.3	98	6.9	100	6.7
March	9	10.2	104	7.3	113	7.5
April	4	4.5	115	8.1	119	7.9
May	11	12.5	124	8.8	135	9.0
June	13	14.8	132	9.3	145	9.6
July	6	6.8	132	9.3	138	9.2
August	14	15.9	156	11.0	170	11.3
September	4	4.5	125	8.8	129	8.6
October	9	10.2	151	10.7	160	10.6
November	7	8.0	119	8.4	126	8.4
December	7	8.0	89	6.3	96	6.4
Unspecified	--	--	2	0.1	2	0.1
Total Number of Collisions	**88**	**100.0**	**1415**	**100.0**	**1503**	**100.0**

Observations

The month of August accounted for the largest proportion of alcohol-involved casualty collisions. The month of January accounted for the smallest proportion of alcohol-involved casualty collisions.

Table 10.4

Alcohol-Involved Casualty Collisions:

Day of Week

1999

	Fatal Collisions		Non-Fatal Injury Collisions		Total Casualty Collisions	
Day of Week	**N**	**%**	**N**	**%**	**N**	**%**
Monday	4	4.5	117	8.3	121	8.1
Tuesday	7	8.0	130	9.2	137	9.1
Wednesday	5	5.7	137	9.7	142	9.4
Thursday	7	8.0	174	12.3	181	12.0
Friday	14	15.9	256	18.1	270	18.0
Saturday	31	35.2	343	24.2	374	24.9
Sunday	20	22.7	254	18.0	274	18.2
Unspecified	--	--	4	0.3	4	0.3
Total Number of Collisions	**88**	**100.0**	**1415**	**100.0**	**1503**	**100.0**

Observations

The highest number of alcohol-involved fatal collisions occurred on Saturday (35.2%). The highest number of non-fatal injury collisions also occurred on Saturday (24.2%). The smallest number of alcohol-involved casualty collisions occurred on Monday and Tuesday.

Table 10.5

Alcohol-Involved Casualty Collisions:

Time Period

1999

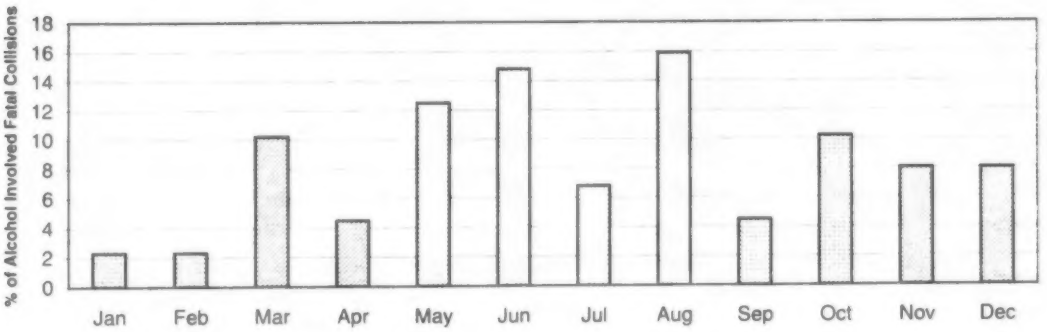
	Fatal Collisions		Non-Fatal Injury Collisions		Total Casualty Collisions	
Time of Day	**N**	**%**	**N**	**%**	**N**	**%**
11:00 p.m. - 2:59 a.m.	34	38.6	475	33.6	509	33.9
3:00 a.m. - 6:59 a.m.	12	13.6	233	16.5	245	16.3
7:00 a.m. - 10:59 a.m.	5	5.7	59	4.2	64	4.3
11:00 a.m. - 2:59 p.m.	3	3.4	64	4.5	67	4.5
3:00 p.m. - 6:59 p.m.	12	13.6	211	14.9	223	14.8
7:00 p.m. - 10:59 p.m.	21	23.9	342	24.2	363	24.2
Unspecified	1	1.1	31	2.2	32	2.1
Total Number of Collisions	**88**	**100.0**	**1415**	**100.0**	**1503**	**100.0**

Observations

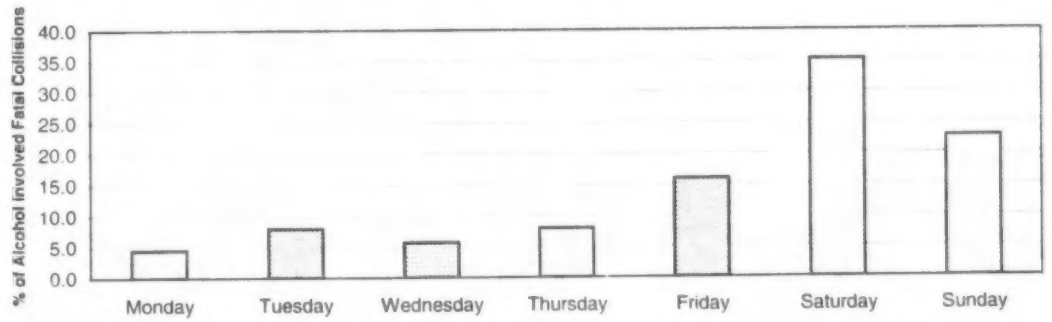
The late night/early morning time period (11:00 p.m. - 2:59 a.m.) was most likely to record alcohol-involved casualty collisions (33.9%). The morning hours (7:00 a.m. - 10:59 a.m.) were least likely to record alcohol-involved casualty crashes (4.3%).

Alcohol Involved Fatal Collisions
Alberta 1999

By Month of Occurrence



By Day of Week



By Time Period

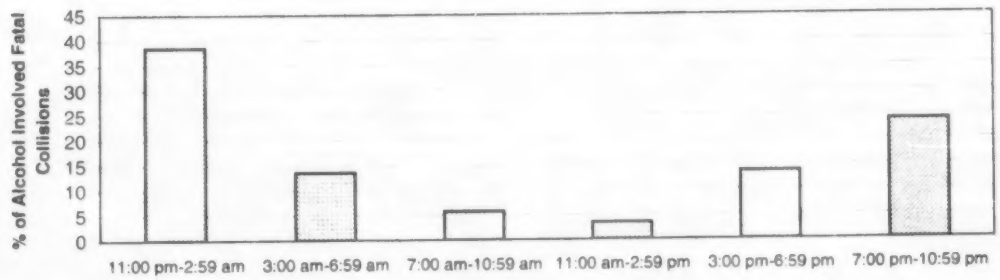


Figure 11

Traffic Safety Issues

Restraint Use

- Collision involved restraint users had a much lower injury rate (15.6%) than those not using restraints (46.7%).
- Non-restraint users were three times as likely as restraint users to be injured.

Table 10.6

Restraint Use of Vehicle Occupants and Injury Severity* (Use versus Non-Use)

1999

Injury Severity of Occupants	Percentage of Occupants Using Restraints	Percentage of Occupants Not Using Restraints
	%	%
Fatal Injury	0.1	1.6
Major Injury	1.2	22.4
Minor Injury	14.4	24.3
Total Occupants Sustaining Non-Fatal Injuries	**15.6**	**46.7**
No Apparent Injury	84.4	51.7
Total Occupants	**100.0**	**100.0**

Observations

Collision involved restraint users had a much lower injury rate (15.6%) than those not using restraints (46.7%). Non-restraint users were three times as likely as restraint users to be injured.

Injury Severity

Fatal - A fatal injury is the death of a person that occurs as a result of a motor vehicle collision within 30 days of the collision.

Major - Persons with injuries or complaint of pain that went to the hospital and were subsequently admitted even if for observation only.

Minor - Persons with injuries or complaint of pain that went to the hospital, were treated in emergency (or refused treatment) and SENT HOME without ever being admitted to the hospital. (Also includes persons who indicate they intend to seek medical attention).

*Based on those cases where occupant restraint use and injury severity were specified on the collision report form.